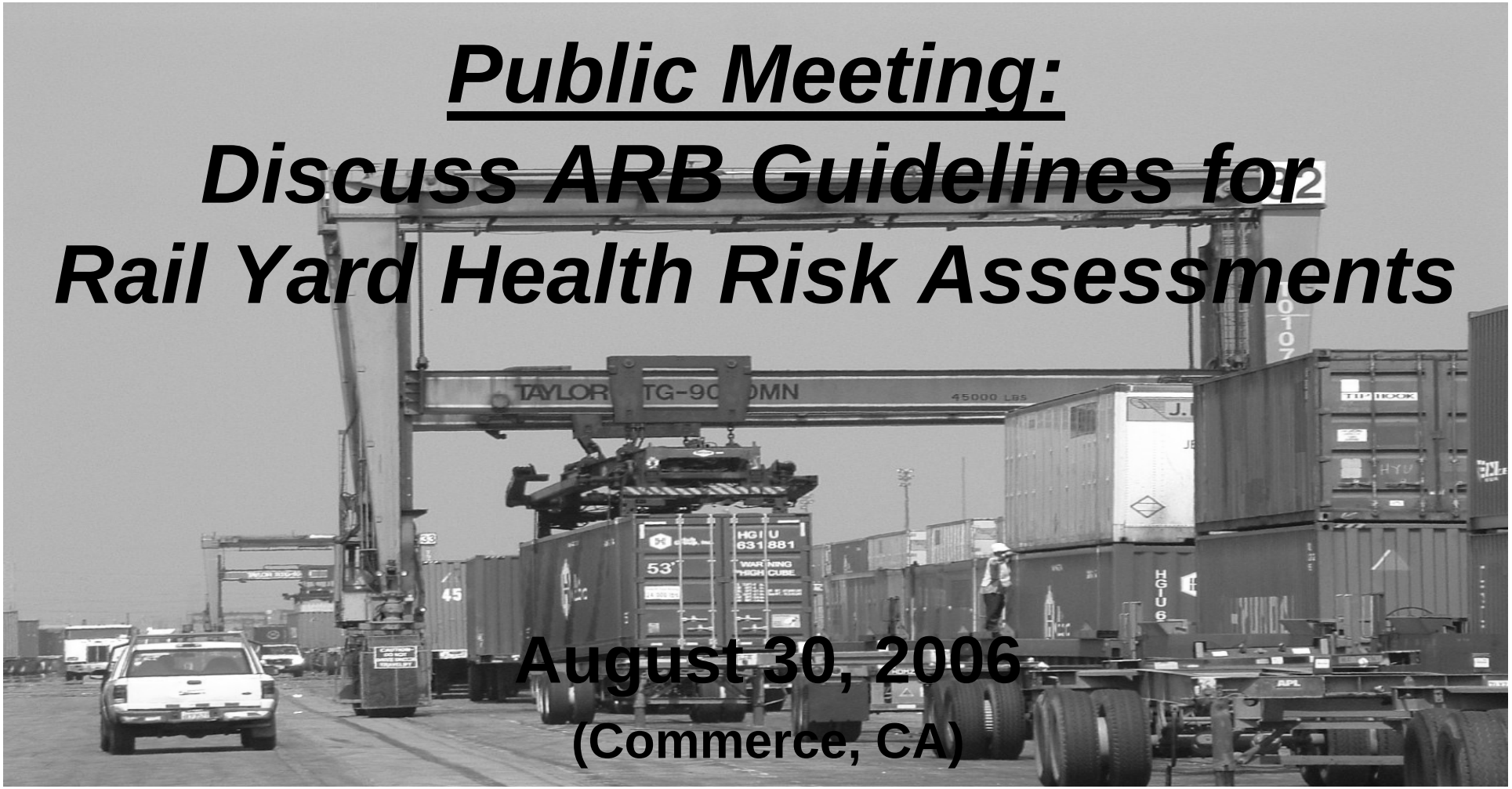
Public Meeting:

Discuss ARB Guidelines for Rail Yard Health Risk Assessments



August 30, 2006

(Commerce, CA)

California Environmental Protection Agency

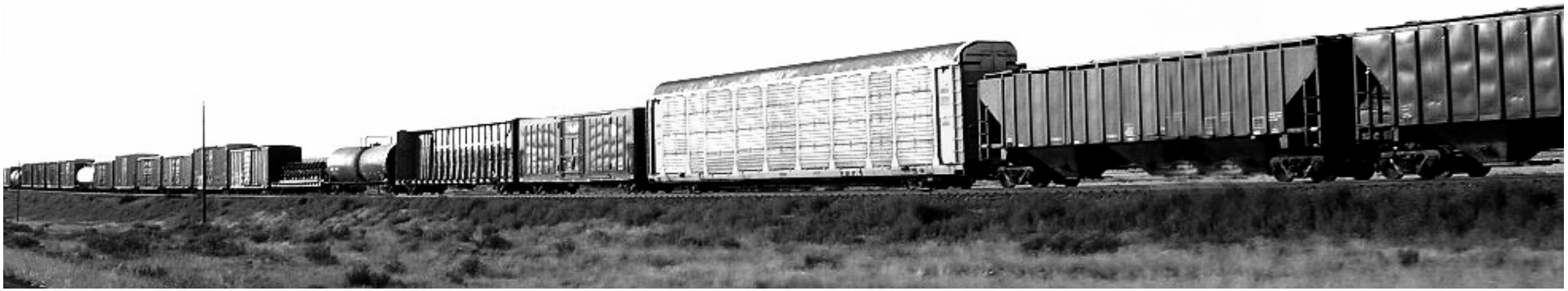
Air Resources Board

Overview of Presentations

- Statewide Locomotive and Railyard Strategies
- Statewide Railyard Agreement
- Railyard Health Risk Assessments (HRAs)
- Guidelines for Railyard HRAs:
  - Emission Inventories (guidelines)
  - Air Dispersion Modelling
  - Health Risk Assessments (guidelines)
- Air District Participation
- Summary and Next Steps

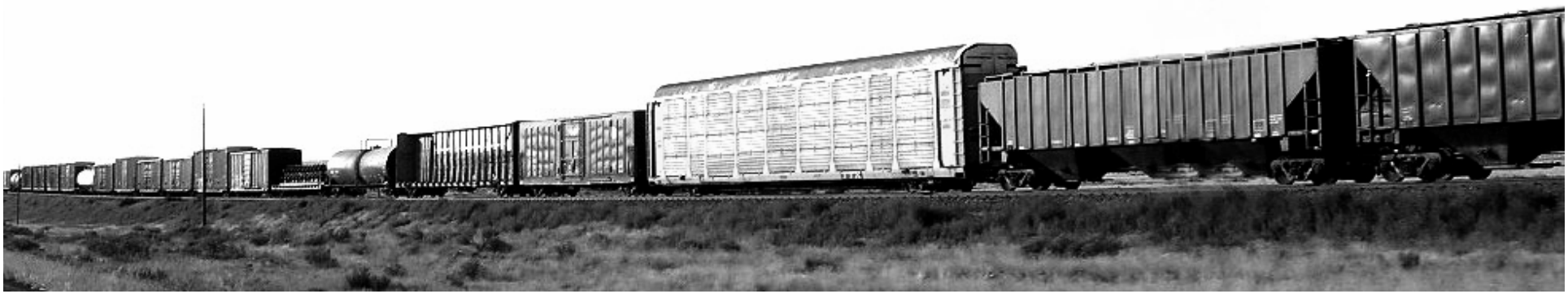
Statewide Locomotive and Railyard Strategies

- South Coast Locomotive Agreement (1998)
- ARB Diesel Regulation - Intrastate Locomotives (2004)
- Statewide Railyard Agreement (2005)
- ARB Cargo Handling Equipment Regulation (2005)
- Element of California's Goods Movement Plan (2006)
- National rulemaking for Tier 3 locomotives (2007)
- Greater than 90% reduction in diesel PM and NOx by 2020 and localized risk reduction



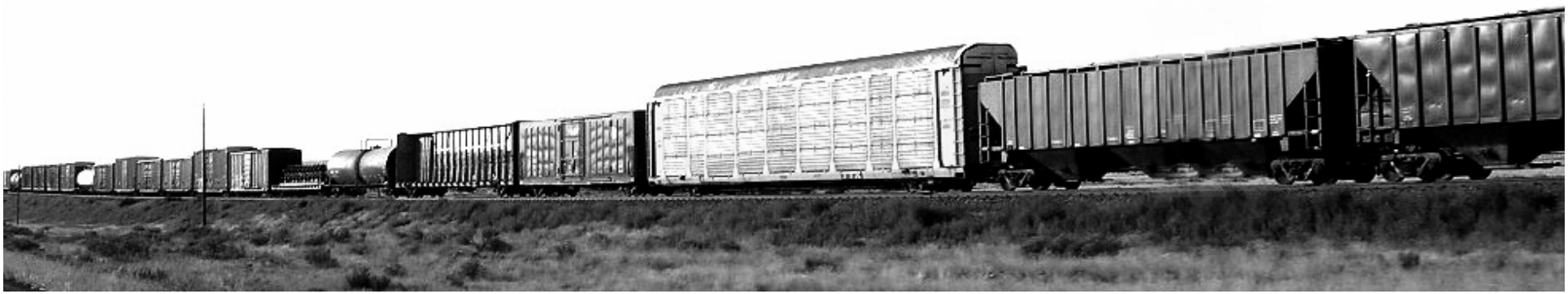
Statewide Railyard Agreement

- **Limit non-essential idling to 60 minutes.**
- **Install anti-idling devices.**
- **Use ultra-low sulfur diesel fuel .**
- **Identify and repair smoking locomotives.**
- **Reduce locomotive diesel PM by 20% in and around rail yards.**



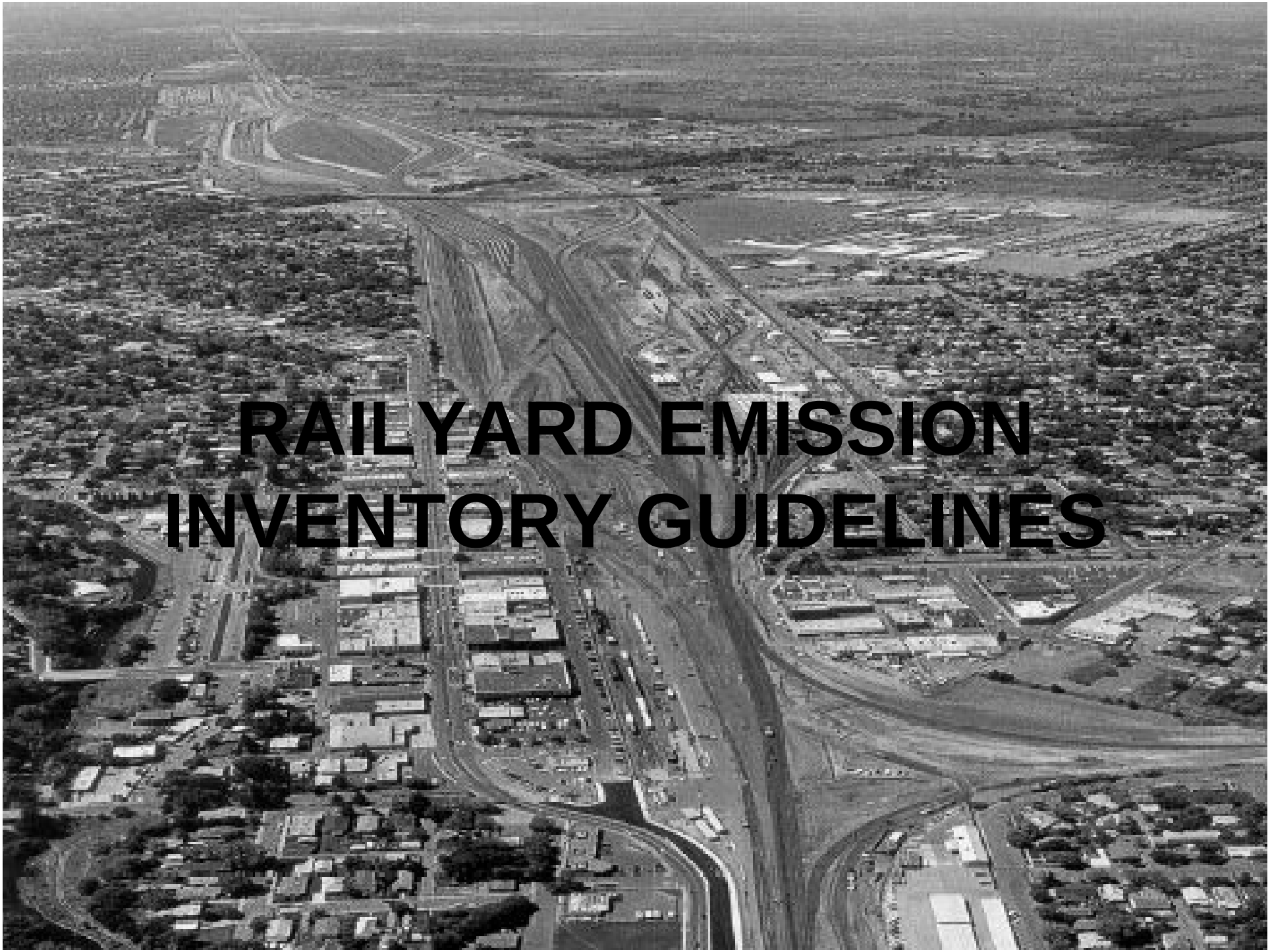
Statewide Railyard Agreement (cont'd)

- **16 new railyard risk assessments by 2008.**
- **Additional mitigation measures in the future.**



Railyard HRA Responsibilities

- **The Railroads (with their consultants)**
  - **80% work within yards**
  - **Railyard emission Inventory**
  - **Railyard air dispersion modeling**
- **ARB**
  - **Review of emissions and modeling**
  - **Emissions/Modeling outside of the yards**
  - **Risk assessments**
  - **Draft HRA reports**

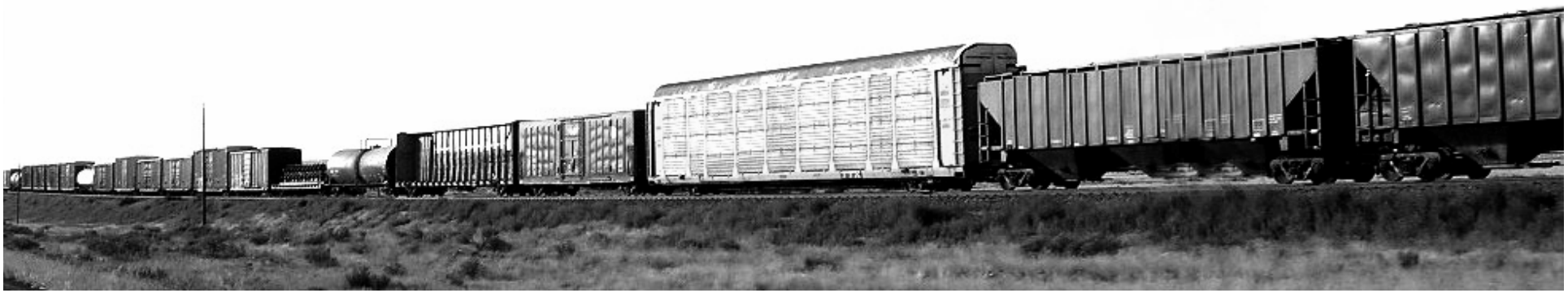


RAILYARD EMISSION INVENTORY GUIDELINES

Railyard Emission Sources

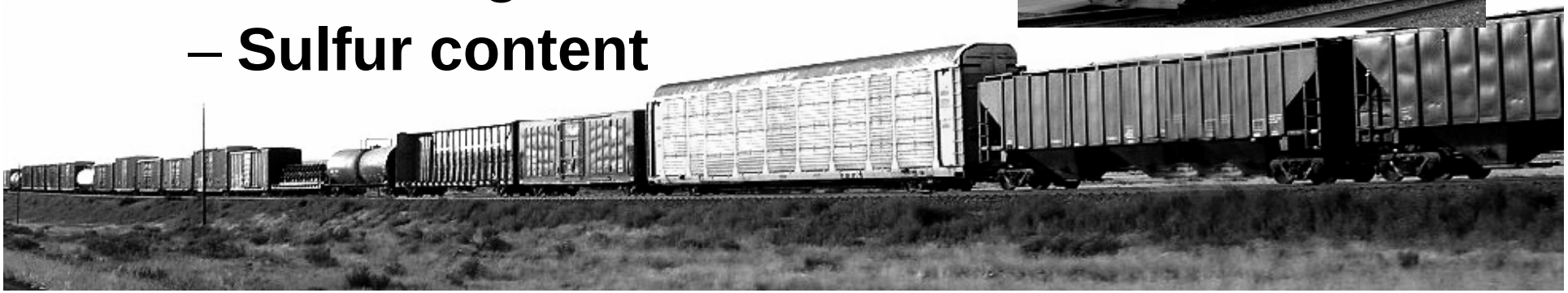
Railyard Emission Inventory

- **Locomotives** (line-hauls, switchers, & passenger)
- **Cargo handling equipment** (e.g. forklifts)
- **Off-road equipment** (e.g. transport refrigeration units)
- **On-road trucks & vehicles** (e.g. container delivery trucks)
- **Stationary Sources** (point & area)



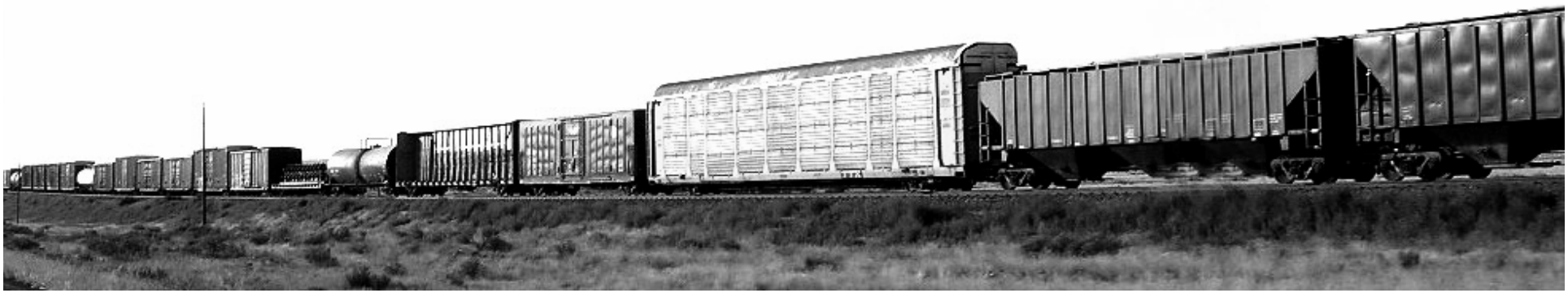
Methodology of Emission Inventory

- Fleet/Equipment population
- Operation activities
  - Operation hours
  - Vehicle mileage traveled
  - Daily activity hours
- Emission factors
- Fuel characteristics
  - Fuel usage
  - Sulfur content



Locomotive Emissions

- **Population of locomotives by classes or groups**
- **Notch or power settings & idling**
- **Emission factors**
- **Hours of operation**
- **Fuel consumption**

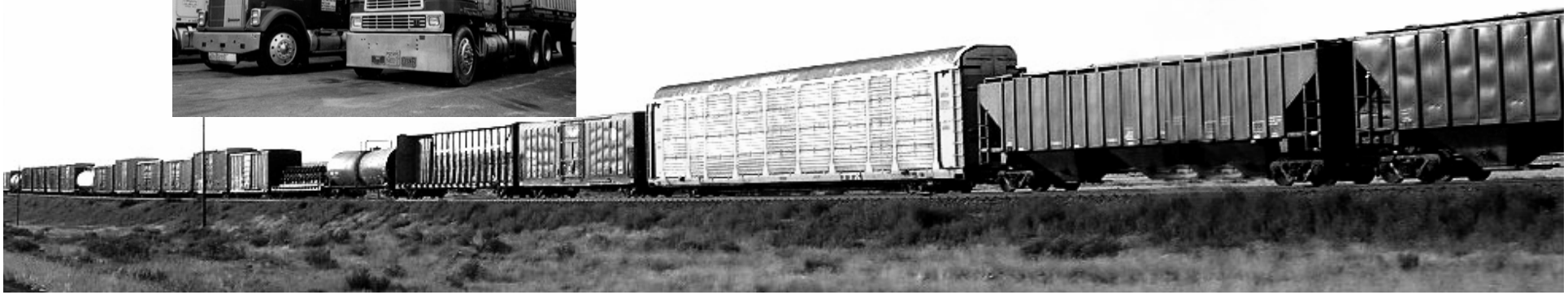


Cargo Handling and Off-Road Equipment Emissions

- **Population of equipment**
- **Emission factors by size and model year**
- **Activity hours**

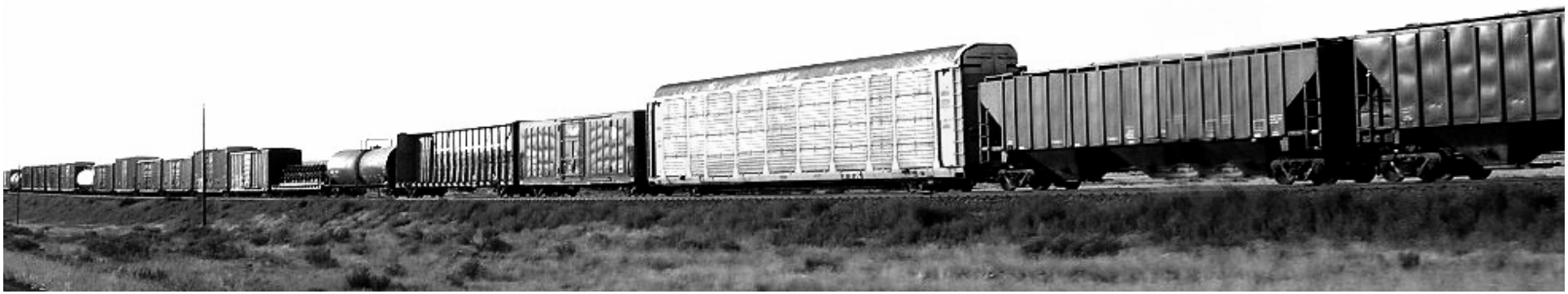
On-Road Truck/Vehicle Emissions

- **Number of trucks and vehicles**
- **Emission factor per mileage traveled**
- **Vehicle mileage**
- **Idling emission and hours**

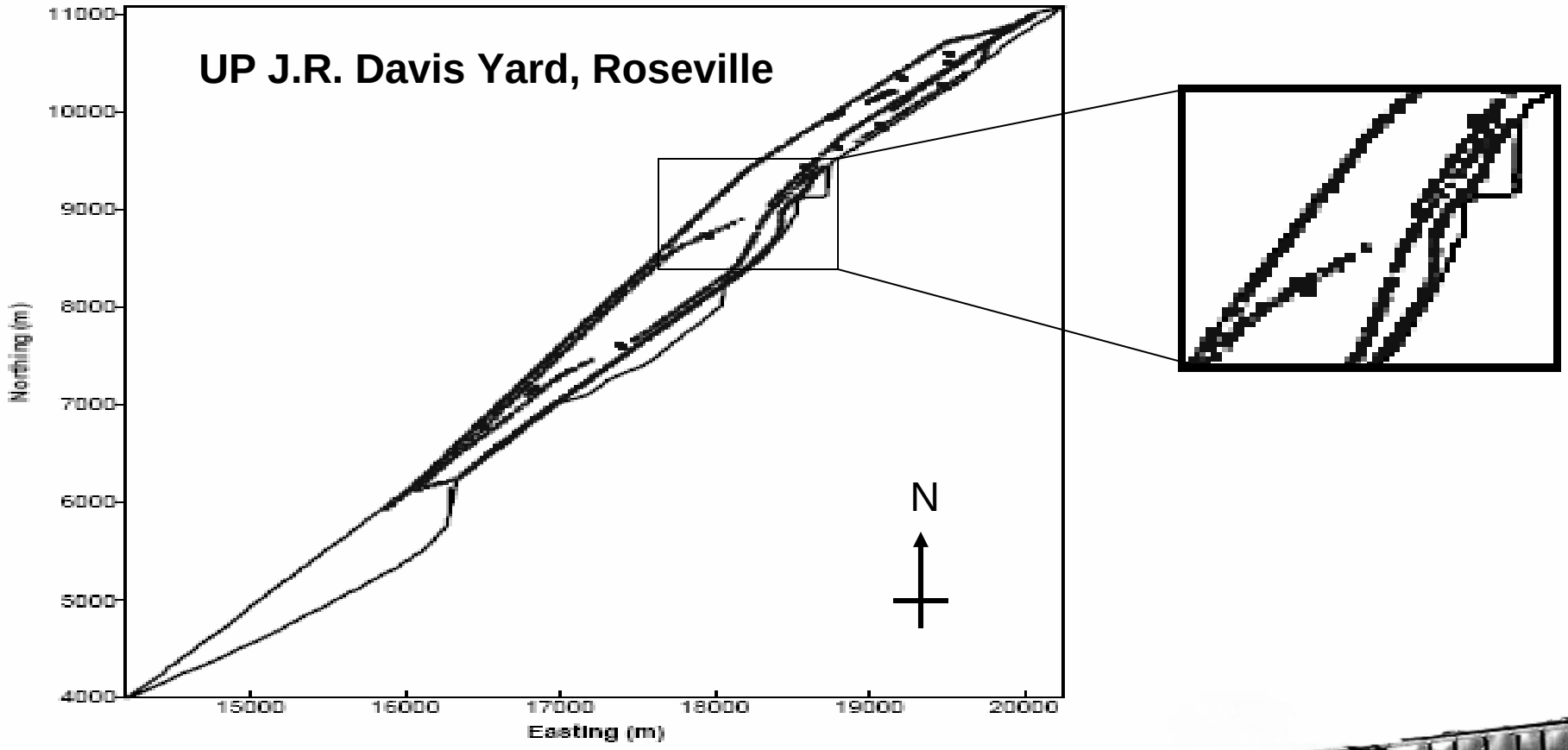


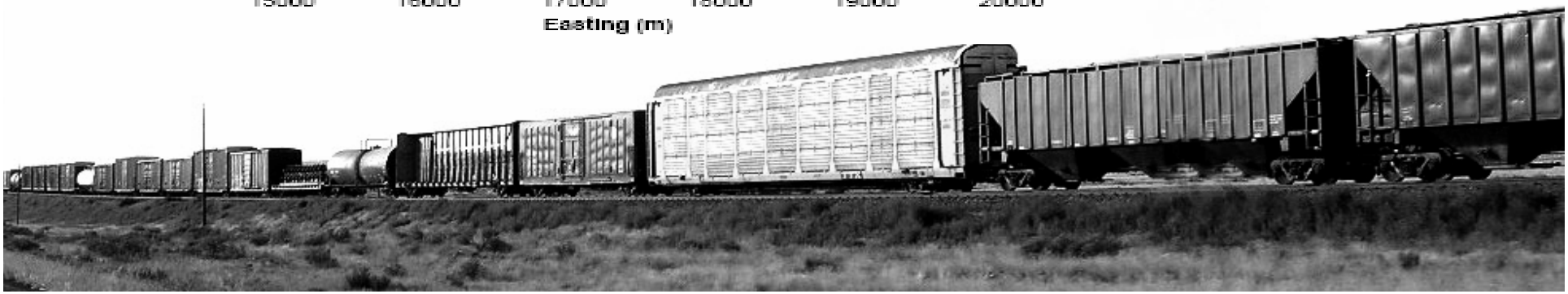
Stationary Source Emissions

- **Number of sources (point and area)**
- **Emission factors**
- **Fuel consumption**



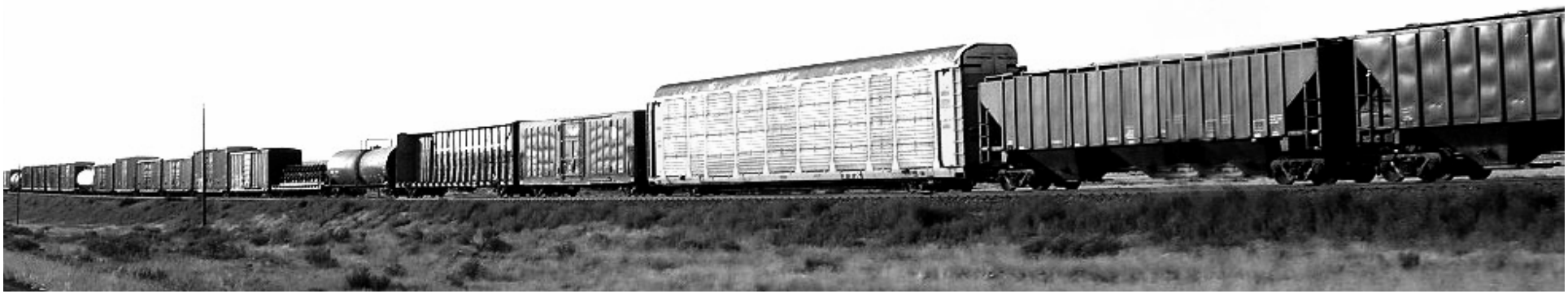
Spatial Distribution of Emissions





Off-Site Emission Assessment

- **Off-site emissions**
- **Off-site modeling**
- **Part of health risk assessment**



ARB Guidelines for Rail Yard Health Risk Assessment

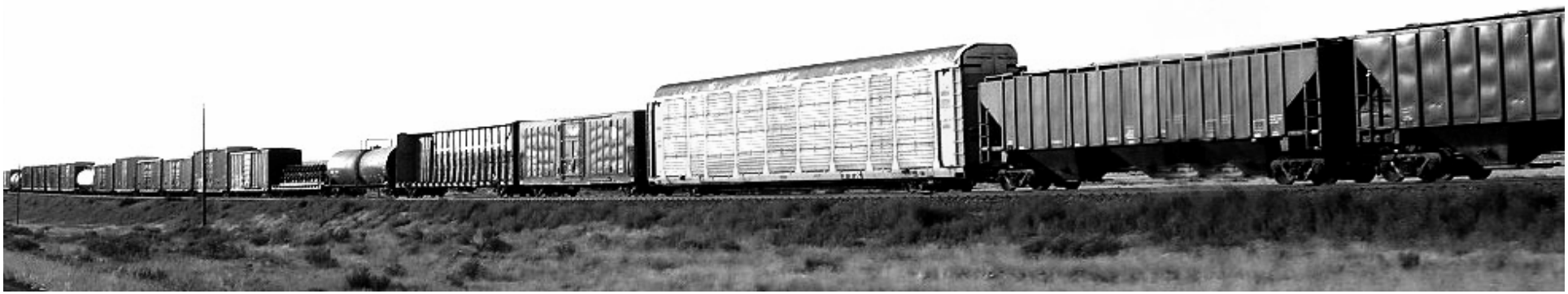
August 30, 2006

California Environmental Protection Agency

Air Resources Board

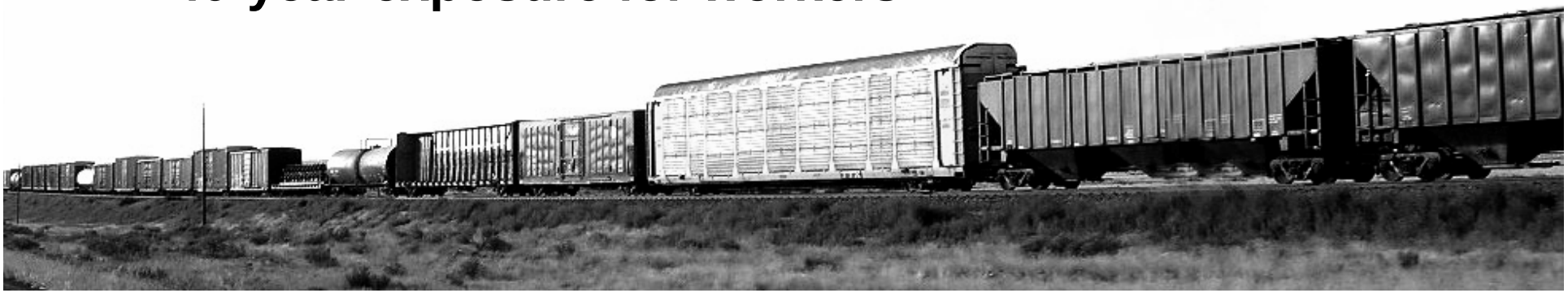
Introduction

- **Rail Yard Health Risk Assessment (HRA) Guidelines**
- **Identify the risks associated with toxic air contaminants (TACs), especially diesel particulate matter (DPM)**

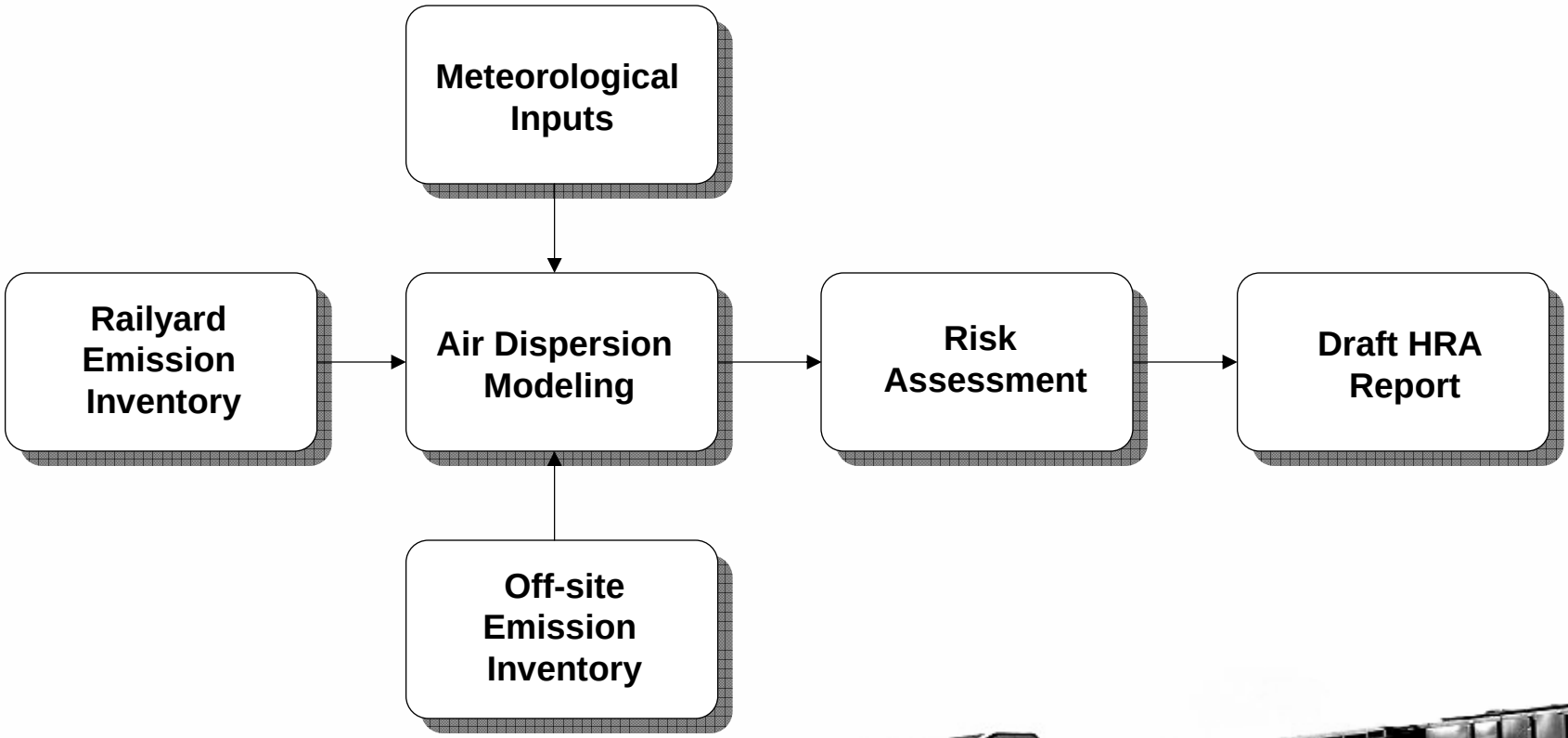


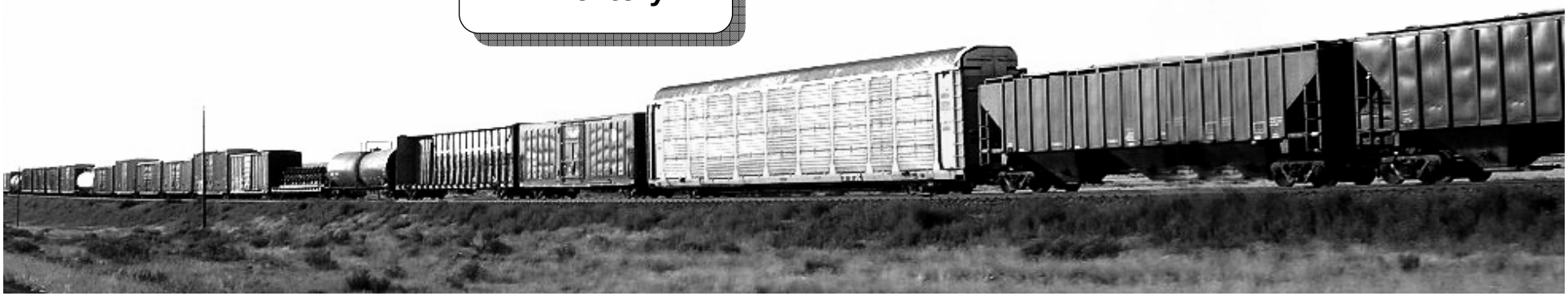
Introduction

- **Air Dispersion Modeling**
  - **Emission inventory inputs**
  - **Meteorological inputs**
  - **Computer model → TAC concentration distributions**
- **Health Risk Assessment**
  - **Concentration distributions → health impacts**
  - **70-year-exposure for residents**
  - **40-year-exposure for workers**



Flow Chart of Railyard HRA

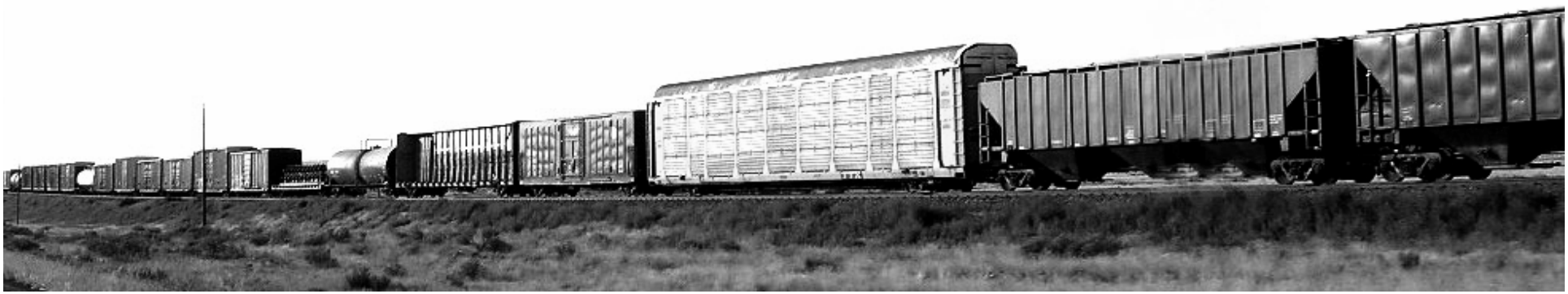




Meteorological Inputs

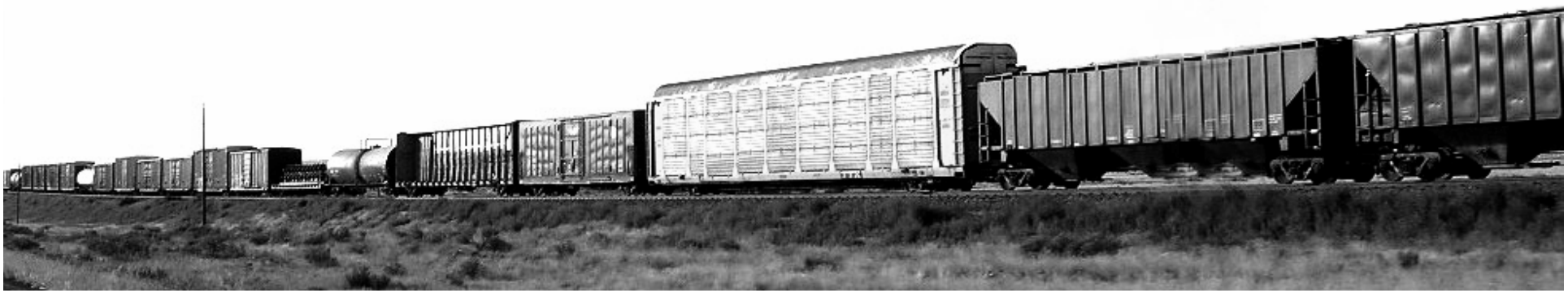
Air Dispersion Modeling

- **Recommended model: AERMOD**
- **Other acceptable models: ISCST3, CALPUFF, etc., on a case by case basis.**

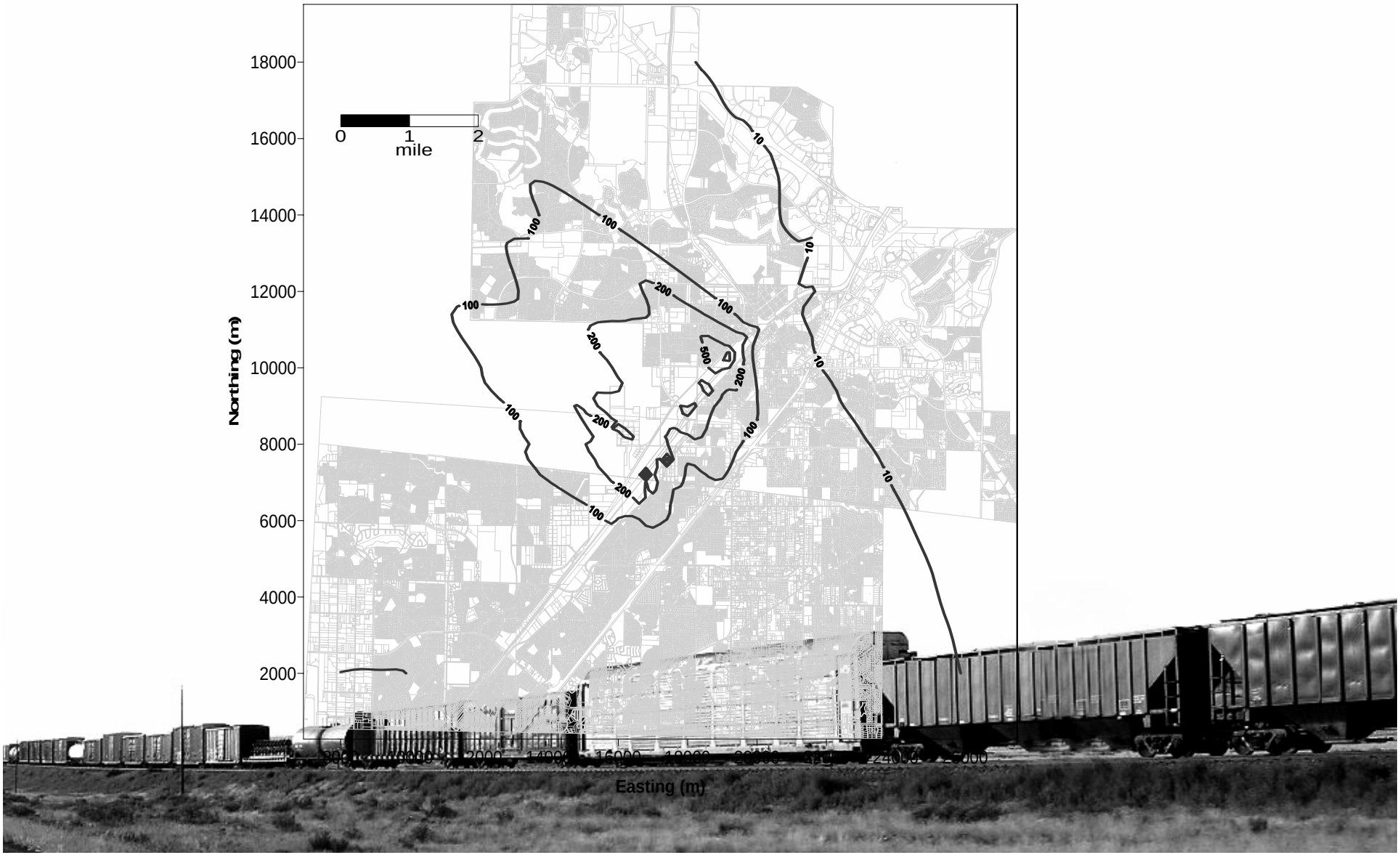


Risk Assessment

- **Consistent with OEHHA HRA Guidelines and ARB Roseville Railyard Study.**
- **Estimate cancer risk, non-cancer chronic and acute health impacts.**

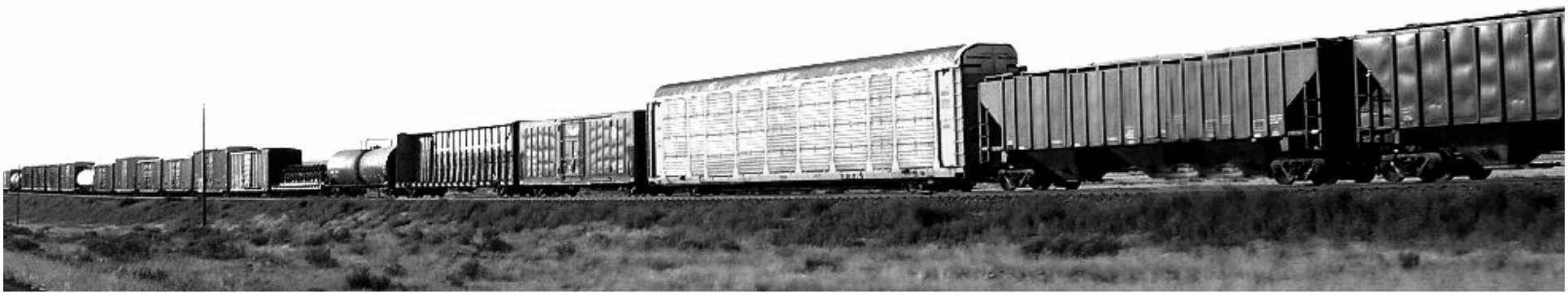


Risk Assessment



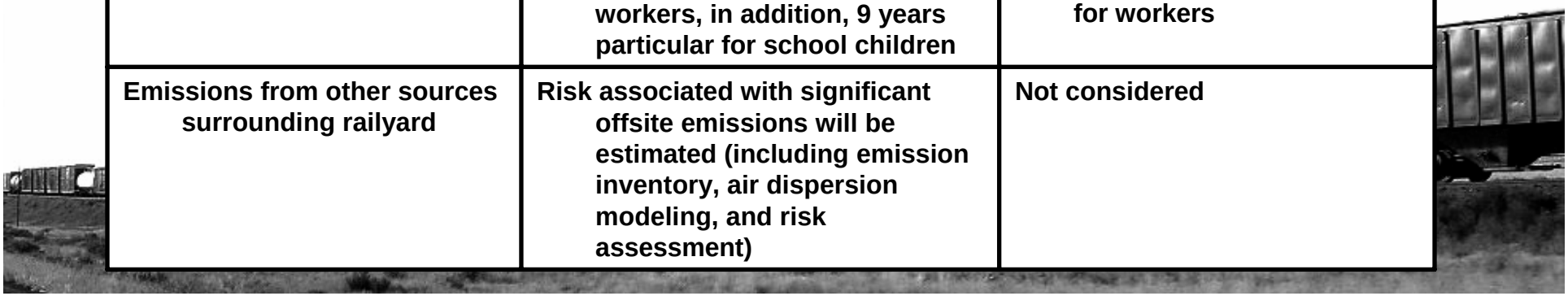
Similarities with SCAQMD Rule 3503

- **Railyard Emission Inventories**
- **Railyard Health Risk Assessments**



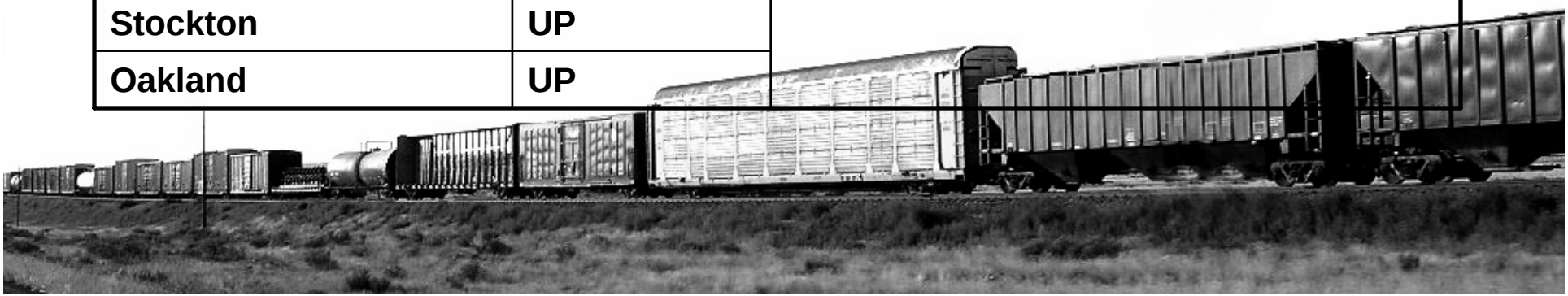
Differences between ARB/SCAQMD HRA Guidelines

Components	ARB Railyard HRA Guidelines	SCAQMD Rule 3503
Applicable railroads	Only class I railroads (UP and BNSF)	Includes class I and two class III railroads
Completion of activity data sets	Annual operations and equipment activity data for the most current complete calendar year on an hourly basis	Extrapolation of a period of three months could be used to develop an annual emissions estimate
Actual activity data vs. average operating mode (AOM)	Actual activity data is preferred, AOM is allowed only if no actual activity data is available	AOM is allowed if operation is in a pattern that is predictable and repetitive
Di Minimis levels	ARB approval on case by case basis	OEHHA guideline: degree of accuracy
Air dispersion model selection	AERMOD, (ISCST3, CALPUFF on a case by case basis)	ISCST3
Meteorological data	Surface + Upper air sounding data required by AERMOD	Surface data required by ISCST3 and suggested by SCAQMD
Receptor grids	50X50m within 1 km, 500X500m outside, 250X250m in between	100X100m or less
Demographic data	US census data in a GIS map	Not required
Exposure duration	70 years for residents, 40 years for workers, in addition, 9 years particular for school children	70 years for residents, 40 years for workers
Emissions from other sources surrounding railyard	Risk associated with significant offsite emissions will be estimated (including emission inventory, air dispersion modeling, and risk assessment)	Not considered



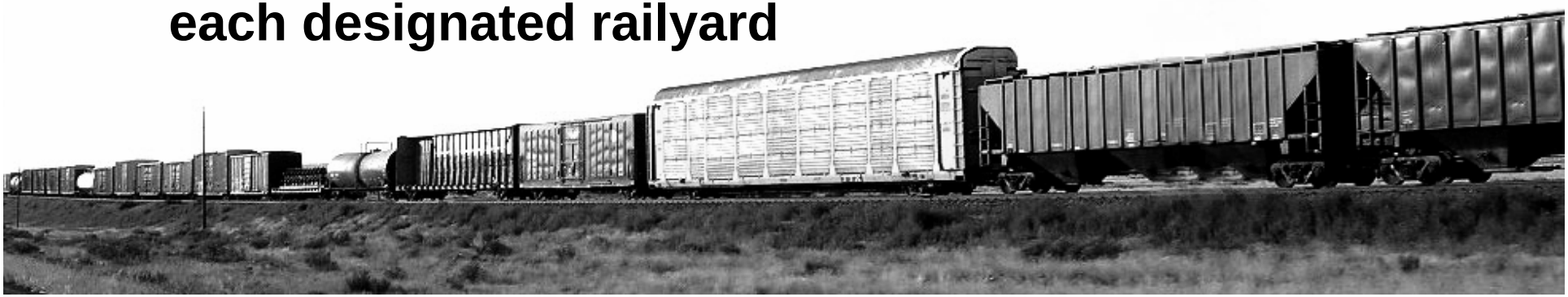
Railyard Health Risk Assessment Schedules

Draft Health Risk Assessments to be Completed by *December 31, 2006*		Draft Health Risk Assessments to be Completed by *December 31, 2007*	
Railyard	**Company**	**Railyard**	**Company**
Commerce/Eastern	BNSF	Barstow	BNSF
Hobart	BNSF	San Bernardino	BNSF
Richmond	BNSF	San Diego	BNSF
Stockton	BNSF	Colton	UP
Watson	BNSF	Dolores/ICTF	UP
Commerce	UP	Industry	UP
LATC	UP		
Mira Loma	UP		
Stockton	UP		
Oakland	UP		



Community Involvement

- **Public workshops on Draft ARB Railyard Health Risk Assessment Guidelines:**
  - **Northern California: 8/28/2006 (Sacramento)**
  - **Southern California: 8/30/2006 (Commerce)**
- **Community meetings to discuss draft findings at each designated railyard:**
  - **Early 2007 (first set of railyard HRAs)**
  - **Early 2008 (second set of railyard HRAs)**
- **Additional discussions on mitigation measures for each designated railyard**



ARB Railyard HRA Contacts

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- **Jing Yuan,** Ph.D.
  - **Air Dispersion Modeling and Health Risk Assessments**
  - **(916) 322-8875; jyuan@arb.ca.gov**
- **ARB Railyard HRA Website:**
  - **http://www.arb.ca.gov/railyard/hra/hra.htm**